

## METHOD AND SYSTEM FOR POPULATION CLASSIFICATION

### ABSTRACT OF THE INVENTION

5        A method and system for classifying populations, with largely unknown distribution characteristics, to enable the forecasting of behavior of the population under study. The invention utilizes mixture-modeling methods combined with classification techniques. The population under study is divided into component homogeneous sub-populations through the use of a mixing variable. This variable is a data element or characteristic of

10    the population under study that is believed to reflect differences among an unknown number of sub-populations which result in a non-homogenous mixed population. Next the population under study is augmented with proportional assignments from the sub-populations and assignment rules are generated for the members of the population. Once assignment rules are generated, new members can be added to the population and

15    longitudinal forecasting of the population behaviors can commence. The invention also includes a Fuller Penalized Chi Squared statistic that is beneficial when formulating the optimal number of sub-population constituents of the population under study. Statistically valid error boundaries around the resultant forecasts are also enabled in this invention. Therefore confidence limits can be included with the behavior forecasts, thus increasing

20    the predictive power.